

Optimal Nutrition and The Antler Growth Cycle
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Antlers on deer are a pretty interesting phenomena, maybe by thinking this process through we can gain some insight on what it takes to help a buck produce a record set of antlers.

The antler cycle is a regulated yearly cycle where the male deer grows antlers and sheds antlers. This is about a 10-month process starting in March or April with pedicle development and ending in January or February when antlers are shed. Months of the year can be slightly different depending if you live in the South or the North. In the white tail deer this process is driven by photo period. When days start to lengthen the pineal gland in the brain notices the change and signals the pituitary to produce more of the hormone testosterone. Testicle circumference is increased serum testosterone increases, also more mature bucks will start to “muscle up”. Testicular circumference and testosterone levels peak at the peak of the rut and decrease rapidly into January, this drop in testosterone is why bucks shed their antlers. Along with this muscle tone will decrease and bucks will deposit more fat as an energy store for winter.

Antler growth takes place in the tips of the antlers. As antlers grow blood is circulated up through the pedicle, through the antler and to the tips. The growing antler is a soft cartilage type tissue that is very delicate. During growth antlers are covered by the velvet, this skin contains many blood vessels and nerve endings. This network of blood vessels and nerves is necessary to transport the nutrients to the rapidly growing antler. In general during April to June the brow-tine and fork of the antler become apparent, in other words a 6 point buck. In July antler growth really takes off and antlers can grow a ½ inch or more per day. During the antler growth period when the antlers are encased in the velvet, antlers are 20% dry matter, 80% Crude Protein, 22% calcium and 11% phosphorus. By the end of July all points can probably be seen but some tine elongation may still take place in August. In September bucks will shed the velvet and polish their antlers. Mature polished antlers are 60% dry matter, 40% crude protein, 25 to 35 % calcium and 19% phosphorus. Mature polished antlers will remain in the beginning of October. Into December thru February bucks will shed antlers and the process will start over again.

Three major factors that determine antler size are: age of the buck, genetics of the animal, and nutrition. Said another way you will not get maximum antler size unless the animal has the genetics, is a healthy mature buck >5years old, and has consumed the nutrients needed to achieve the genetic potential. We can have some control over these as we manage our hunting areas. First is we can avoid harvesting young bucks, take only the bucks that are at least 5 years old. Believe me I am not saying this is easy, but it is one way to manage for bucks with optimum antlers. Harvesting only mature bucks lets you, over time select for only the bucks with the best racks in you area. Sure this is much easier if you own a large plot of land, but even working with you buddies you can

manage an area of a few hundred acres and make a difference. If your deer herd has the proper age structure and buck to doe ratio, bucks that exhibit less than desirable antler characteristics can be removed at an earlier age (3-4 yrs old). Research has shown that this age class of deer do the majority of the breeding during the rut. This should only be practiced though when your herd has the proper age structure with at least 30% of you bucks being in the 5.5 or older age bracket. Enough of that sermon. Number 2 is easier than number 1, harvest the mature bucks displaying undesirable antler characteristics. Lets make sure we have the best gene pool. Number 3 is to provide as near to optimum nutrition for the deer as you can.

Antler growth from pedicle development to velvet shedding takes about 100 days on average, but feeding for antler growth is a 365-day a year job. So lets step through how a deer uses nutrients from late March through to early march the next year and how that bears on nutrient requirements. In March and April as pedicle development starts the buck needs amino acids, from protein, and minerals , these can come of the diet the buck is consuming. During antler growth from pedicle to the forked antler stage the buck pull amino acids from the diet consumed, but minerals start to come from bone reserves as well. During the rapid growth phase of antler development, late June through mid August the buck can not consume enough amino acids or minerals to meet the maximum possible antler growth rate so the buck has to pull from bone and body reserves to do this. If there are not ample reserves to pull from maximum antler production will not be obtained, in other words the main beam could have a smaller diameter and points could be reduced in size or number of points off the main beam could be reduced. By the end of August or September when antler growth is done and velvet is shed antler growth and hence nutrient demand for their growth is done.

Although this years set of antlers are what they are, in the fall we start to build for the next set of antlers. We need to keep body condition up to help the buck get through rut in good condition and post rut we need to make sure the buck has a well balanced diet to ensure repletion of bone mass, minerals for next summers antler growth, and body mass, the amino acid pool to support antler growth next year. Mature whitetail deer will sometimes go days during the rut without eating and can lose up to 30% of their body weight due to the stress of rutting activity. Post-rut stress is responsible for more death loss in mature deer than anything, simply due to the fact that they are run down and typically have very low quality forage available to replenish body reserves. Bucks that are still growing or trying to replenish body reserves in late spring and summer will not grow the antlers that they have the genetic potential for if they are still trying to restore body condition.

How do we meet these year round nutritional needs you might ask? The first thing we do is work to make sure the deer density is correct for the land base, in many cases this may mean working with a Wildlife Biologists in order to get it figured out. Next we need to look at making sure we are ready to supplement the native habitat when needed, such as during drought, winter, or when the animal has higher nutrient requirements to optimum performance that what they will get off the habitat. That means balancing food plots and supplemental feed to meet those needs. Most likely feeding a complete balanced protein/

mineral/ energy supplement year round makes sense because you are either growing antlers or remodeling bone most of the time and that requires sufficient amounts of each for maximum genetic expression. Be sure to use a supplement that compliments the native habitat and does not replace it. All of the supplemental feed in the world will not replace good habitat.

As you can see Antler growth is a year round job and just because you do not see antler growth taking place does not mean it is time to take a break from optimum feeding of the buck.